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ABSTRACT

There are several research areas basic to the long-range future of human communications. Telecommunication and transportation offer the possiblity of two worldwide communications networks whose interrelationships need to be explored in terms of the needs of the individual, the community, and the world at large. Expanding possibilities of human-machine, human-animal, and human-extraterrestrial communication suggest the need for an area of study called comparative communication systems. To explore the communication needs and requirements of the future, a multicultural right-to-communicate group is needed to formulate new patterns leading to a deeper understanding of the relationships between human communication and human needs. (AA)

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FUTURES OF HUMAN COMMUNICATION

by

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1.0 Introduction

We had seen an "earthrise" a few months before that moon day in July, 1969 when Neil Armstrong took his now historic small step for a man that was also a giant step for humankind. More than a quarter-billion of us, still earthbound, saw him take that step and heard him forecast its significance. One of the four billion of us, by the temporary accident of presidency, was priviledged to pick up his phone and talk with Armstrong as the rest of us listened in on a global party-line. We saw; we heard; we were there as the dimensions of human communication were radically, fundamentally, and irreversibly changed.

Early in 1972 a small group of us met in Hawaii to consider the changes in communication we sensed were underway. We were interested in the areas of communication technology, population communication, and communication in the future and the common issues and concerns that united those areas. During the course of that conference on world communication, as we were to call it, a major theme emerged. That theme incorporated a number of still fresh concepts such as feedback, interaction, two wayness and transceivers.

In his conference summary, Lerner remarked:

> "For most of the forty years we have been doing modern communication research, we have operated with a paradigm invented by Harold Lasswell around 1930 which ran: who says what to whom through what channel with what effect. . . . Right from the very beginning of this conference that paradigm was put aside and dimension by dimension a new one began to emerge. . . . Where the initial Lasswell formula might well be reversed and that . . . 'Who is talking back to who talked to whom' . . . is the main thing we ought to be looking at." (Lerner in Richstad and Harms, 1973)

A few months later Harold Lasswell was at the East-West Center speaking on the futures of world communication. In his distinction between oligarchic and participatory communication, Lasswell himself seemed to be speaking for a new paradigm. (Lasswell, 1972)

In a broader context Kuhn, in his discussion of scientific revolutions, asserts that the transition from one paradigm to another paradigm signals a shift from normal science to revolutionary science. More specifically, Kuhn states:

> "Confronted with anomoly or crisis, scientists take a different attitude toward existing paradigms, and the nature of their research changes accordingly. The proliferation of competing articulations, the willingness

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> to try anything, the expression of discontent, the recourse to philosophy and to debate over fundamentals, all these symptoms of a transition from normal to extraordinary research." (Kuhn, 1970)

In these days of future-shock, I assume we are in agreement that we are involved in a communication revolution. It follows, then, that we will need to think in extraordinary ways, do extraordinary research, and communicate extraordinarily well with each other.

2.0 Possible Research Areas

Some of the descriptors of a "post-Lasswell" paradigm for human communication are: participatory, two-way, cooperative, interactive and purposeful. It is convenient to consider such communication as occuring within organized communication systems that operate within one of two world communication networks. Within the domain of human communication, the balance between information processing and communicative association (or interpersonal relationships in human contact) appears critical (see Harms, 1974).

Within this general framework, there are several possible research areas basic to the long-range future of human communication. In particular, I will consider world communication networks, some novel communication systems, and the Right of Everyone to Communicate.

2.1 Two World Communication Networks

To visualize the dimensions of our planet, it is helpful to "construct" a mercator-type mosaic about 200 square million miles in size--the approimate surface area of earth. About 140 million square miles are water-covered. Just under 60 million square miles are "dry" land (McHale, 1972). On this mosaic, imagine each dot to represent one human. In 1800, there were one billion human dots; in 1976, 4.0 billion; and, in 2000, more than 6 billion are expected.

Imagine for the moment that it is dark across the entire surface of our earth-sized mosaic, say 0400 SWT (Single World Time), and all of the human dots are in their home "households" fast asleep. An hour later, at 0500 SWT, the world awakes and the activities of the day begin. Assume that all of those activities--the various traffics--leave visible traces on the surface of our earth-sized mosaic.

At 1100 SWT of the following day, we examine the location of our human dots. Worldwide, a substantial percentage remain in their home "households," but there are strong variations in this pattern from community to community and region to region. Most importantly, millions of new clusters of dots will appear on our

mosaic. The activities and traffics across the face of our mosaic form a bewildering array of patterns, so let us single out two for attention.

The first of these global patterns is traced by people on the move (information bearers) from their households to both nearby and distant destinations for variable periods of time, but most often to destinations of less than 50 miles from home for a period of less than 10 hours. The heavy lines in this pattern reveal the major roadways in urban communities that link the outlying households to the center of the city. But there is another set of traces that lead to the nearby airport, and that airport is a node in a world air transportation network. The traces from airport to airport outline the world air routes. The household garage and automobiles, the local roadways leading to the center of the city and to the local airport, the airport itself, the air routes and the planes together constitute the major elements in a world transportation communication network. The big jet is an appropriate symbol.

A second global pattern is traced by the movement of messages between humans, for the most part, while they are in their daytime mosaic formation. While postal service, telegraph and so on contribute to this pattern, the telephone use (and subsequently, broadband cable) patterns reveal the real-time networks that now link and will continue to link human communicators in the future. Again, as in the case of transportation, most of the telephone traffic arises from "within-community" message interchange. But as the long links become available they are put into use. The communication satellites make more channel capacity available and that capacity is essentially independent of distance. The communication satellite symbolizes the world telecommunication network.

There now exists two world communication networks. For many purposes of human communication, these networks are <u>interchangeable</u>. For purposes of information exchange, telecommunication often saves enough transportation time to make it preferred, as when you phone your stockbroker to buy or sell, or inquire about a particular transaction. For purposes that emphasize communicative association (interpersonal relationship), transportation may be preferred to telecommunication; even Ma Bell advertises that a phone call is only the "next best thing to being there." <u>If</u> telecommunication is the next best thing to being transported "there," we need to know how great the difference between best and next best is, and the variation in preferences among people on this point.

A few years ago Pierce suggested that in the future, a human would be able to live where he/she liked and telecommunicate to work. The transportation facilitated "closed" university contrasts with the telecommunication facilitated "open"

university. The transportation dependent tourist who flies to a distant city and rides through its streets in a tour bus that provides a "3-D view" may experience essentially identical experience in his own living room with 3-D TV. Thus, in business, education, and tourism telecommunication network capacity can be traded for transportation capacity--to some extent, some of the time.

For a major telecommunication/transportation trade to occur, households would require home communication terminals. These terminals would be connected by broadband cable to community cable centers. Such centers would also contain advanced communication technology for group use, and a satellite ground station. Thus, every communicator could remain in his household and employ a home communication terminal, and go to a nearby "communication work center," as in some of the new towns in England and Japan, or on occasion, transport himself to work, or school, or travel as in the good old days.

Home communication terminals, and local community communication plazas would be expensive, at least at first, and in particular when compared to present day telephone, radio and television. The more useful comparison, however, would be with the second private car, or with the cost of a new mass transit system. In fact, the second car provides a convenient vehicle for bringing about a tele/trans trade. Heavy taxes on second cars could be used to subsidize development, installation and use of home communication centers. And/or, instead of diverting gasoline taxes from highway to mass transit construction, we might get at the root of the problem by diverting tax resources to "electronic" highway construction, that is, to broadband cable facilities.

Given the existing telecommunication technology and some additional hardware that will soon be available, a variety of telecommunication sub-networks could be designed for any community. Suitable features can be built into the home terminal, for instance, two-way audio visual, hard copy printouts and interactive computer capacity. But as such telecommunication facilities come into use, a critical research question arises. To what extent would humans use these telecommunication facilities in preference to the transportation facilities. Will office workers and students and tourists, for example, stay at home and telecommunicate enough of the time to relieve crowding at the center of the city of the type that occurs in Tokyo Station at rush hours. Certainly, tax incentives and educational programs and other devices could be employed to make the telecommunication option attractive. But at the fundamental level it is a question of human need for communication and in particular the relationship between the not always compatible human requirements for information and association and privacy.

Let us look at ourselves for a moment. Those of us in this room have transported ourselves here at some cost in time for purposes of communication. Had each of us remained at home and telecommunicated to this conference, would the outcome of the conference have been different? In the future, can we specify a telecommunication/transportation ratio for the individual, for the community, or for mankind? The question can be re-phrased within the framework of the global mosaic. To provide the necessary diversity and variety in human communication, to what extent must the day mosaic differ from the night mosaic? And what are the required network linking capacities?

As we develop world communication networks a major new set of possibilities awaits us. Sagan speculates that there now exists an interstellar telecommunication network and that within a century, perhaps this century, our earth telecommunication network will interlink, become part of, that interstellar network. Clarke speculates in a similar vein about an interstellar transportation network. Earthmen have been to the moon and back. Skylab may come to serve as a skyport for an interstellar transportation network. Teleportation awaits us at some future time as well. (Sagan, 1973; Clarke, 1972)

2.2 Comparative Communication Systems

We humans, in defining ourselves to others of our species, stress that it is our unique capacity for communication that sets us apart from and places us above the other members of the animal and machine kingdoms. We examine our communication capacities, and conclude that we are intelligent (Sagan, 1973). We briefly examine communication among members of other species and, more often than not, conclude they are not intelligent, or are of such low intelligence as to be uninteresting.

In the few cases where we have attempted interspecies communication, we have tried to train an animal to communicate with us as we assume human children learn to communicate (Sebeok, 1968). Vicki, a chimpanzee, lived with a human family for six years and learned four English words. Washoe, another chimp, in less than six years has learned more than 500 signs of the type employed by deaf humans. So apparently have her normal-hearing human co-communicators. Even a sligh adaptation on the part of the human communicator has made the chimp appear to us to be much more intelligent (Gardner and Gardner, 1969).

The same story seems to be unfolding in human-dolphin attempts to communicate. Lilly becomes eloquent in describing the advantages we humans would experience if we are able to cooperate with the dolphins in building an interspecies communication system (Lilly, 1967).

While we know painfully little about the nature of chimpanzee or dolphin intelligence, we presumably know somewhat more about artificial or machine

intelligences. Assume for the moment that this is the case. Man-machine communication appears to offer an opportunity for a clear examination of the information processing aspects of a communication system in which a human communicator participates. But as the interaction between man and machine more nearly approximates that of human-human dialogue, will some of the "human" characteristics, as the case of HAL in 2001, become evident in the machine. Man-machine communication increasingly is described in the descriptors of a post-Lasswell paradigm, that is, interaction, symbiosis, and synergy (Hormann, 1971).

If or when the speculations about interstellar communication networks transform into a sensible reality, we humans will then be faced with the prospect of establishing communication with the ETI (Extra Terrestrial Intelligences). At present, it seems probable that those ETI we might link with via an interstellar network might be ten or ten thousand times more intelligent than we humans are. And there is the curious possibility that the ETI might survey the earth, and by their definition, discover intelligent life in the computers because of their reliability in information processing or in the dolphins for the high quality of their inter-dolphin associations!

The possibilities just described will or might greatly expand the range of human communication options: man-machine, human-animal, earthman-ETI. In each of these cases, communication may be viewed as occurring in systems. Thus, the possibility of an area of research that might be called comparative communication systems opens up. Lilly, for instance, suggests that such an approach in human-animal communication would provide information useful for Man-ETI communication.

The city facilitates face-to-face, interpersonal human communication. Human contact, interpersonal relationships, or communicative association is presumed to be important. But a high percentage of office workers, for instance, spend an increasing proportion of their workday before terminals linked to a distant computer. How are other aspects of the work situation affected? The answer to questions such as this one probably forecast the degree to which telecommunication can be traded for transportation. The tele-trans trade is also to a major extent a centralized/decentralized, or an urban/rural trade.

2.3 The Right to Communicate

The Universal Declaration of Human Rights was passed by the United Nations General Assembly in December, 1948. Two of the articles in that Declaration bear on a post-Lasswell paradigm of communication. Articles state that every human has the right "to seek, receive and impart information . . ." Article 20 makes two

points about human association: every human has the right to join an association; no one can be forced to belong to an association. Jean d'Arcy has suggested that Article 19 needed to be revised and expanded into a full range Right to Communicate. As one examines d'Arcy's suggestion in the context of overloads and interrogations which are often part of city life, it is immediately apparent that there must also be for each human an equal Right Not to Communicate (d'Arcy in Harms, Richstad and Kie, in preparation).

When a communicator has the unquestioned Right Not to Communicate, certain requirements for community size and availability of alternate communicators come into focus. In a community of two and only two communicators,when one communicator elects not to communicate, the other communicator is unable to communicate. When we know more about human communication capacities and needs--both upper and lower limits or threshold ranges--we will begin to be able to specify minimal and maximum community sizes, and the appropriate telecommunication/transportation network ratios. In sum, an unquestioned Right Not to Communicate reaches to the center of community organization.

An increase in human population and an intensification of communication at the center of the city obviously makes a filter or protective device necessary for the human communicator. The unlisted home telephone number is one such protective device. The executive who is shielded by a phone answering, appointment-granting receptionist filters out many potential communicators. But these are awkward devices that do not identify the basic problems of capacity nor do they develop widely useful procedures for dealing with them.

While it may be possible to define some aspects of a Right Not to Communicate in terms of biological capacities, to specify a positive Right to Communicate runs immediately into the cultural limitations of the specifier. Given the relationship between culture and communication, the task of formulating a set of guidelines or principles on the Right to Communication, if it is possible at all, can most likely be accomplished by a multicultural group (Harms, and Richstad, 1975). In this context, the PUGWASH movement provides an example.

As you may know, the PUGWASH conferences on Science and World Affairs began in the mid-fifties at a time when the horrors of nuclear war had become fully apparent. The PUGWASH movement was begun by a manifesto drafted by Bertrand Russell and signed by Albert Einstein and a number of Nobel Prize winners from around the world. The first conference was held in Pugwash, Nova Scotia in 1957. Invitations were issued to participants in their "private capacities" and financing of the conferences was made possible by private philanthropic sources. To an

unusual degree, the PUGWASH Conferences were and have remained independent. About one such conference has been held per year. While it is difficult to assess adequately such a venture, it seems clear that the recent disarmament talks were made possible, in a significant part, by the work of PUGWASH (Rotblat, 1968).

In an attempt to determine the communication needs and requirements, in a word the Rights, of the individual human, of any community and the world, a multicultural group operating in a PUGWASH pattern seems useful. Such a Right to Communicate group would attempt to conceptualize the domain to be covered. Or, most probably, it would invent out of multicultural discussion a pattern not yet available to a person from any particular cultural group.

Quite possibly, in addition to an annual world conference attended by a few dozen or a few hundred conferees, regional Communication Rights sub-groups would emerge that would undertake specific research assignments. The range of questions is very large; those questions clearly require extraordinary research.

If the city is accurately described today as a communication center, then, many of the statements to be formulated in the future about the Communication Rights of Humankind also become instructions for the organization and management of urban areas. Such statements may take the form of articles, long-range goals, criteria for criticism, theoretic axioms, etc. Both form and content remain to be determined.

3.0 Summary

This paper begins with a broad look at the telecommunication/transportation relationships, then proposes an area of study called comparative communication systems, and concludes with the description of a mechanism which may at some future time lead to a deeper understanding of the relationships between human communcation and the humanness of being.

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